

IMAGE SENSOR WITH PERFORMANCE ENHANCING STRUCTURES

Robert A. Street

James B. Boyce

John Christopher Knights

ABSTRACT

An image sensor is disclosed including passivation walls extending above the pixel contact pads into a photosensor layer (e.g., amorphous silicon) such that the pixel contact pads are isolated to reduce cross-talk. The passivation walls are formed from SiO_2 or SiON to further reduce cross-talk. An embodiment includes metal structures provided under interface regions (e.g., under the passivation walls) separating adjacent pixels that are negatively biased to prevent cross-talk, and optionally extend under the contact pad to increase pixel capacitance. One embodiment omits p-type dopant from the lower amorphous silicon photodiode layer, and additional photodiode material layers are disclosed. Another disclosed sensor structure utilizes a textured surface to increase light absorption. A color filter structure for image sensors is also disclosed.